



## ENVIRONMENTAL RESOLUTIONS, INC.

April 24, 2006  
ERI 261913JF.L51

Ms. Joan Fleck  
North Coast Regional Water Quality Control Board  
5550 Skylane Boulevard, Suite A,  
Santa Rosa, California 95403

**SUBJECT** Domestic Well Sampling  
2050 and 2075 Marlow Road and  
1815 Guerneville Road  
Santa Rosa, California.

Ms. Fleck:

At the request of Redwood Oil Company (Redwood), Environmental Resolutions, Inc. (ERI) is submitting this revised domestic well sampling schedule for the subject properties. During December 2004, Redwood initiated monthly groundwater sampling of the water supply and/or irrigation wells located at the subject sites. In January 2005 and 2006, the California Regional Water Quality Control Board, North Coast Region (Regional Board) directed Redwood to continue monthly sampling in letters dated January 5, 2005 and January 10, 2006. During October 2005, Redwood installed wellhead treatment systems on the subject wells. Each system consists of two 110-pound granulated activated carbon vessels connected in series; an ultraviolet light source; system totalizer; and influent, intermediate, and effluent sampling ports on the wells.

Since installation of the wellhead treatment systems in October 2005:

- Dissolved-phase fuel hydrocarbons and related compounds, excluding methyl tertiary butyl ether (MTBE) have not been detected in reportable concentrations in influent water samples collected from the wells.
- MTBE has been detected in reportable concentrations in 5 of 6 influent water samples collected from well 2050 up to 20 micrograms per liter ( $\mu\text{L}$ ).
- MTBE has been detected in 1 of 6 influent water samples collected from well 2075 at 0.74  $\mu\text{L}$ .
- MTBE has been detected in 2 of 6 influent water samples collected from well 1815 ranging from less than 0.5 to 1.3  $\mu\text{L}$ .
- Dissolved-phase fuel hydrocarbons and related compounds have not been detected in reportable concentrations in intermediate and effluent water samples collected from the wellhead treatment systems except for 54  $\mu\text{L}$  total petroleum hydrocarbons as diesel (TPHd) detected in the intermediate water sample collected from well 1815 during November 2005. Kiff Analytical, LLC (Kiff) indicated that the chromatogram pattern for the diesel-range hydrocarbons detected in the intermediate water sample collected from the wellhead treatment system did not resemble a typical diesel chromatographic pattern. Diesel-range hydrocarbons were not present in reportable concentrations in influent and effluent water samples collected from the 1815 wellhead treatment system.

Based on laboratory analytical results of monthly water samples collected from the domestic wells (attached); the absence of reportable concentrations of dissolved-phase hydrocarbons and related compounds in intermediate and effluent water samples collected from the wellhead treatment systems (exception noted above); and the sporadic occurrence and relatively low concentrations of MTBE in influent water samples collected from the wellhead treatment systems, Redwood has implemented a revised domestic well sampling schedule. Redwood will continue to perform routine visits to maintain the treatment systems.

The subject domestic well wellhead treatment systems will be sampled on a quarterly schedule. Influent water samples collected from each wellhead treatment system will be analyzed for TPHd; total petroleum hydrocarbons as gasoline (TPHg); benzene, toluene, ethylbenzene, and total xylenes (BTEX); and MTBE. If dissolved-phase hydrocarbons and related compounds are not detected in the influent water samples, intermediate and effluent samples will not be submitted for analysis. Please contact Mr. Glenn L. Matteucci, ERI's project manager for this site, at (707) 766-2000 with any questions.

Sincerely,  
Environmental Resolutions, Inc.

**SCANNED IMAGE**  
Glenn L. Matteucci  
Project Manager

Attachment: Reference

Cumulative Monitoring and Sampling Data for Private Water Well and Well Head Treatment System(s).

cc: Mr. John Mahoney, Redwood Oil Company

**REFERENCE**

California Regional Water Quality Control Board, North Coast Region. January 5, 2005. Transmittal of Well Results and Work Plan Request, Redwood Oil #114, 1855 Guerneville Road, Santa Rosa, California. Case No. 1TSR088

California Regional Water Quality Control Board, North Coast Region. January 10, 2006. Comments on Supplemental Evaluation of Groundwater and Well Head Treatment System Installation, Redwood Oil #114, 1855 Guerneville Road, Santa Rosa, California. Case No. 1TSR088

**TABLE 2**  
**CUMULATIVE MONITORING AND SAMPLING DATA FOR PRIVATE WATER WELL**  
**AND WELL HEAD TREATMENT SYSTEM**  
 Redwood Oil Facility 114  
 1855 Guerneville Road  
 Santa Rosa, California  
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Well ID	Sample Date	Sample ID	TPHd ( $\mu\text{g/L}$ )	TPHg ( $\mu\text{g/L}$ )	MTBE ( $\mu\text{g/L}$ )	B ( $\mu\text{g/L}$ )	T ( $\mu\text{g/L}$ )	E ( $\mu\text{g/L}$ )	X ( $\mu\text{g/L}$ )	ETBE ( $\mu\text{g/L}$ )	TBA ( $\mu\text{g/L}$ )	DIPE ( $\mu\text{g/L}$ )	TAME ( $\mu\text{g/L}$ )	1,2-DCA ( $\mu\text{g/L}$ )	EDB ( $\mu\text{g/L}$ )	Ethanol ( $\mu\text{g/L}$ )	Methanol ( $\text{mg/L}$ )
DW1815	01/31/05	—	—	—	—	<1	—	—	—	—	<5	<10	<5	<5	—	<100	<0.5
DW1815	02/25/05	—	—	—	—	<1	—	—	—	—	<5	<10	<5	<5	—	<100	—
DW1815	03/30/05	—	—	—	—	<1	—	—	—	—	<5	<10	<5	<5	—	<100	<0.5
DW1815	04/22/05	—	—	—	—	<1	—	—	—	—	<5	<10	<5	<5	—	<100	<0.5
DW1815	05/20/05	—	—	—	—	<1.0	—	—	—	—	<5.0	<10.0	<5.0	<5.0	—	<100	<0.50
DW1815	06/17/05	—	—	—	—	1.3	—	—	—	—	<5.0	<10	<5.0	<5.0	—	<100	<0.50
DW1815	07/22/05 a	—	—	—	—	18.0	—	—	—	—	<5.0	<10	<5.0	<5.0	—	<100	0.84b
DW1815	08/05/05	—	—	—	—	1.2	—	—	—	—	<5.0	<10	<5.0	<5.0	—	<100	<0.50b
DW1815	09/23/05	—	—	—	—	1.1	—	—	—	—	<5.0	<10	<5.0	<5.0	—	<100	<0.50
DW1815	October 2005 - Treatment system installed.																
DW1815	10/19/05	W-INF	—	—	—	1.1	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<100	<0.50
		W-INT	—	—	—	<1.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<100	0.83c
		W-EFF	—	—	—	<1.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<100	<0.50
DW1815	11/18/05	W-INF	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<5.0	<50
		W-INT	54d	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<5.0	<50
		W-EFF	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<50
DW1815	12/29/05	W-INF	<50	<25	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	—	—	—
		W-INT	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	—	—	—
		W-EFF	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	—	—	—
DW1815	01/31/06	W-INF	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<100	<0.50
		W-INT	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<100	<0.50
		W-EFF	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<100	<0.50
DW1815	02/27/06	W-INF	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<100	<0.50
		W-INT	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		W-EFF	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DW1815	03/17/06	W-INF	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<5.0	<0.050
DW2050	04/21/99	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	08/11/99	—	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	10/28/99	—	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	02/04/00	—	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	05/01/00	—	<50	<50	<5.0	<2.0	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	07/25/00	—	<50	<50	<5.0	<2.0	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	10/26/00	—	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	01/17/01	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	04/24/01	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	07/31/01	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	12/05/01	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	01/31/02	—	<50	<50	<5.0	2	<1	<1	<1	<1	—	—	—	—	—	—	—
DW2050	04/17/02	—	<50	<50	<5.0	4	<1	<1	<1	<1	—	—	—	—	—	—	—
DW2050	05/24/02	—	<50	<50	<5.0	<5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2050	07/10/02	—	<50	<50	4	<1	<1	<1	<1	<1	—	—	—	—	—	—	—

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Well ID	Sample Date	Sample ID	TPHd ( $\mu\text{g/L}$ )	TPHg ( $\mu\text{g/L}$ )	MTBE ( $\mu\text{g/L}$ )	B ( $\mu\text{g/L}$ )	T ( $\mu\text{g/L}$ )	E ( $\mu\text{g/L}$ )	X ( $\mu\text{g/L}$ )	ETBE ( $\mu\text{g/L}$ )	TBA ( $\mu\text{g/L}$ )	DIPE ( $\mu\text{g/L}$ )	TAME ( $\mu\text{g/L}$ )	1,2-DCA ( $\mu\text{g/L}$ )	EDB ( $\mu\text{g/L}$ )	Ethanol ( $\mu\text{g/L}$ )	Methanol ( $\text{mg/L}$ )
DW2050	08/07/02	—	<50	<50	<5	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	—	
DW2050	10/10/02	—	<50	<50	5.7	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	—	
DW2050	01/13/03	—	<50	<50	4.4	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	—	
DW2050	04/16/03	—	<50	<50	4	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	07/16/03	—	<50	<50	9	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	10/21/03	—	<50	<50	11	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	04/06/04	—	<50	<50	6.4	<0.5	<0.5	<0.5	<1	—	—	—	—	—	—	—	
DW2050	12/31/04	—	<50	<50	27	<0.5	<0.5	<0.5	<0.5	—	<5	<10	<5	<5	<5	<5	
DW2050	01/31/05	—	<50	<50	22	—	—	—	—	—	22	<5	<10	<5	<5	<5	
DW2050	02/25/05	—	<50	<50	19	—	—	—	—	—	—	—	—	—	—	—	
DW2050	03/30/05	—	<50	<50	15	—	—	—	—	—	—	—	—	—	—	—	
DW2050	04/22/05	—	<50	<50	20	—	—	—	—	—	—	—	—	—	—	—	
DW2050	05/20/05	—	<50	<50	7.6	—	—	—	—	—	—	—	—	—	—	—	
DW2050	06/17/05	—	<50	<50	16	—	—	—	—	—	—	—	—	—	—	—	
DW2050	07/22/05 a	—	<1.0	<1.0	—	—	—	—	—	—	—	—	—	—	—	—	
DW2050	08/05/05	—	<50	<50	20	—	—	—	—	—	—	—	—	—	—	—	
DW2050	09/23/05	—	<50	<50	26	—	—	—	—	—	—	—	—	—	—	—	
DW2050	October 2005 - Treatment system installed.				—	—	—	—	—	—	—	—	—	—	—	—	
DW2050	10/19/05	W-INF	—	—	20.0	—	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
		W-INT	—	—	<1.0	—	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
		W-EFF	—	—	<1.0	—	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
DW2050	11/18/05	W-INF	<50	<50	20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50
		W-INT	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50
		W-EFF	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50
DW2050	12/29/05	W-INF	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
		W-INT	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
		W-EFF	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
DW2050	01/27/06	W-INF	<50	<50	3.9	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
		W-INT	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
		W-EFF	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
DW2050	02/27/06	W-INF	<50	<50	3.5	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
		W-INT	—	—	<1.0	—	—	—	—	—	—	—	—	—	—	—	—
		W-EFF	—	—	<1.0	—	—	—	—	—	—	—	—	—	—	—	—
DW2050	03/08/06	W-INF	<50	<50	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<0.50
		W-INT	—	—	<0.50	—	—	—	—	—	—	—	—	—	—	—	—
		W-EFF	—	—	<0.50	—	—	—	—	—	—	—	—	—	—	—	—
DW2075	07/24/01	—	<50	<50	<5.0	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2075	12/05/01	—	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2075	01/31/02	—	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2075	04/17/02	—	<50	<50	<1	<1	<1	<1	<1	<1	—	—	—	—	—	—	—
DW2075	07/10/02	—	<50	<50	<1	<1	<1	<1	<1	<1	—	—	—	—	—	—	—
DW2075	10/10/02	—	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	—	—	—	—	—	—	—
DW2075	01/13/03	—	<50	<50	<50	<1	<1	<1	<1	<1	—	—	—	—	—	—	—
DW2075	04/16/03	—	<50	<50	<50	<1	<1	<1	<1	<1	—	—	—	—	—	—	—

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Well ID	Sample Date	Sample ID	TPHd (µg/L)	TPHg (µg/L)	MTBE (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	ETBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Ethanol (µg/L)	Methanol (mg/L)
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Notes:

Data collected prior to April, 2004 compiled from the ECM Group Systems Operations Report dated July 9, 2004.

- TPHd = Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015M.
- TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8260B. Prior to 10/19/05, analyzed using EPA Method 8015M.
- MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8260B. Prior to 12/31/04 analyzed using EPA Method 8021B.
- 8TEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8260B. Prior to 10/19/05, analyzed using EPA Method 8021B.
- ETBE = Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
- TBA = Tertiary butyl alcohol analyzed using EPA Method 8260B.
- DIPE = Di-Isopropyl ether analyzed using EPA Method 8260B.
- TAME = Tertiary amyl methyl ether analyzed using EPA Method 8260B.
- 1,2-DCA = 1,2-Dichloroethane analyzed using EPA Method 8260B.
- EDB = 1,2-Dibromoethane analyzed using EPA Method 8260B.
- Ethanol = Ethanol analyzed using EPA Method 8260B.
- Methanol = Methanol analyzed using EPA Method 8015.
- µg/L = Micrograms per liter.
- mg/L = Milligrams per liter.
- = Not measured/Not sampled/Not analyzed.
- < = Analytes not detected at or above the laboratory reporting limit.
- a = Results not consistent with historical trend; samples for DW1815, DW2050, and DW2075 likely mislabeled in field.
- b = Methanol results updated on 10/10/05.
- c = Methanol detection in intermediate port sample likely due to laboratory contamination.
- d = Hydrocarbons reported as TPH as diesel do not exhibit a typical diesel chromatographic pattern.